

We claim:

1. A digital processing implemented method for processing a data set enabling interactive random access for different views of an object, said method comprising:
 - storing a plurality of frames of said object, said plurality of frames representing a set of views of said object;
 - assigning a reference number to each of said plurality of frames;
 - arranging said plurality of frames in a preferred layout; and
 - dividing said preferred layout into a plurality of blocks having frames sharing spatial similarities and compressing each of said plurality of blocks separately.
2. A method as in claim 1 further comprising selecting at least one key frame and a plurality of non-key frames for each of said plurality of blocks and compressing each of said non-key frame and said key frame for each of said plurality of blocks separately such that a compressing sequence includes going away from said key frame until reaching a boundary of each of said plurality of blocks to cover each of said non-key frames.
3. A method as in claim 2 wherein a longest compressing path of any one of said non-key frames and said key frame is less than a predetermined number of frames from said key frame.

4. A method as in claim 3 further comprising including a video track layout for said set of views, said video track layout making references to a data source track, said data source track to comprise compressed data for said set of views wherein each of said at least one key frame and said non-key frames is compressed only once and is referenced as many times as necessary by said video track layout.
5. A method as in claim 4 wherein each of said video track, wherein at least one key frame is near a center of each of said plurality of blocks.
6. A method as in claim 5 wherein each of said plurality of blocks has a size that is one of equal to a predetermined size and smaller than said predetermined size.
7. A method as in claim 6 wherein said preferred layout is a two-dimensional array.
8. A method as in claim 7 further comprising:
 - dividing said preferred layout such that a smaller size block is at a further top and a further left corner of said preferred layout and a larger size block is at a further bottom and a further right corner of said preferred layout; and
 - selecting said at least one key frame such that said at least one key frame is closer to a further top and a further left corner of each of said plurality of blocks.
9. A method as in claim 8 wherein a frame differencing compression method is used to compress each of said plurality of blocks separately.

10. A method as in claim 1 wherein said method is performed by a server computer system.
11. A method as in claim 10 wherein said method is performed by a world-wide web server.
12. A method as in claim 9 wherein said method is performed by a server computer system.
13. A method as in claim 12 wherein said method is performed by a world-wide web server.
14. A digital processing implemented method for receiving and using a data set enabling interactive random access for different views of an object, said method comprising:
 - transmitting a request to receive said data set, said data set including frames of said object, said frames representing views of said object; and
 - receiving said data set wherein said frames were arranged in a preferred layout, said preferred layout was divided into a plurality of blocks wherein each of said plurality of blocks was compressed separately.
15. A method as in claim 14 wherein said input further comprising manipulating said object using a cursor which is displayed on a display device.

16. A method as in claim 15 further comprising:

receiving an input which requests a selected number of said views;
mapping said input to a selected appropriate number of frames in said frames; and
decompressing said selected appropriate number of frames.

17. A method as in claim 16 further comprising:

storing said selected appropriate number of frames that are compressed; and
allowing a user to playback said selected number of said views in a movie-like
sequence.

18. A method as in claim 17 wherein said method is performed by a digital processing
system and wherein said data set is received from a server computer system.

19. A method as in claim 14 wherein said data set further comprises at least one key
frame and a plurality of non-key frames for each of said plurality of blocks, each of
said at least one key frame was compressed prior to said non-key frames such that a
compressing sequence includes going away from said key frame until reaching a
boundary of each of said plurality of blocks to cover each of said non-key frames.

20. A method as in claim 19 wherein said preferred layout, said plurality of blocks, said
at least one key frame, and said plurality of non-key frames were arranged such that a

longest compressing path of any one of said non-key frames and said key frame is less than a predetermined number of frames from said key frame.

21. A method as in claim 20 wherein said data set further comprising a video track layout for said views, said video track layout making references to a data source track, said data source track including compressed data for said views wherein each of said at least one key frame and said non-key frames is compressed only once and is referenced as many times as necessary by said video track layout.
22. A method as in claim 21 wherein each of said at least one key frame is near a center of each of said plurality of blocks.
23. A method as in claim 22 wherein each of said plurality of blocks has a size that is one of equal to a predetermined size and smaller than said predetermined size.
24. A method as in claim 23 wherein said preferred layout is a two-dimensional array.
25. A method as in claim 24 wherein said preferred layout is divided such that a smaller size block is at a further top and a further left corner of said preferred layout and a larger size block is at a further bottom and a further right corner of said preferred layout and wherein said at least one key frame is closer to a further top and a further left corner of each of said plurality of blocks.

26. A method as in claim 25 wherein said method is performed by a digital processing system and wherein said data set is received from a server computer system.
27. A method as in claim 26 wherein a frame differencing compression method is used to separately compress each of said plurality of blocks.
28. A computer readable storage medium containing executable computer program instructions which when executed cause a digital processing implemented method for processing a data set enabling interactive random access for different views of an object, said method comprising:
- storing a plurality of frames of said object, said plurality of frames representing a set of views of said object;
 - assigning a reference number to each of said plurality of frames;
 - arranging said plurality of frames in a preferred layout; and
 - dividing said preferred layout into a plurality of blocks having frames sharing spatial similarities and compressing each of said plurality of blocks separately.
29. A computer readable storage medium as in claim 28 further comprising selecting at least one key frame and a plurality of non-key frames for each of said plurality of blocks and compressing each of said non-key frame and said key frame for each of said plurality of blocks separately such that a compressing sequence includes going

away from said key frame until reaching a boundary of each of said plurality of blocks to cover each of said non-key frames.

30. A computer readable storage medium as in claim 29 wherein said dividing said preferred layout into a plurality of blocks and said selecting at least one key frame and a plurality of non-key frames for each of said plurality of blocks are such that a longest compressing path of any one of said non-key frames and said key frame is less than a predetermined number of frames from said key frame.
31. A computer readable storage medium as in claim 30 further comprising including a video track layout for said set of views, said video track layout making references to a data source track, said data source track to comprise compressed data for said set of views wherein each of said at least one key frame and said non-key frames is compressed only once and is referenced as many times as necessary by said video track layout.
32. A computer readable storage medium as in claim 31 wherein each of said video track at least one key frame is near a center of each of said plurality of blocks.
33. A computer readable storage medium as in claim 32 wherein each of said plurality of blocks has a size that is one of equal to a predetermined size and smaller than said predetermined size.

34. A computer readable storage medium as in claim 33 wherein said preferred layout is a two-dimensional array.

35. A computer readable storage medium as in claim 34 further comprising:

dividing said preferred layout such that a smaller size block is at a further top and a further left corner of said preferred layout and a larger size block is at a further bottom and a further right corner of said preferred layout; and selecting said at least one key frame such that said at least one key frame is closer to a further top and a further left corner of each of said plurality of blocks.

36. A computer readable storage medium as in claim 35 wherein a frame differencing compression method is used to compress each of said plurality of blocks separately.

37. A computer readable storage medium as in claim 28 wherein said method is performed by a server computer system.

38. A computer readable storage medium as in claim 36 wherein said method is performed by a server computer system.

39. A computer readable storage medium containing executable computer program instructions which when executed cause a digital processing implemented method for receiving and using a data set enabling interactive random access for different views of an object, said method comprising:

transmitting a request to receive said data set, said data set including frames of
said object, said frames representing views of said object; and
receiving said data set wherein said frames were arranged in a preferred layout,
said preferred layout was divided into a plurality of blocks wherein each
of said plurality of blocks was compressed separately.

40. A computer readable storage medium as in claim 39 wherein said input further
comprising manipulating said object using a cursor which is display on a display
device.

41. A computer readable storage medium as in claim 40 further comprising:
receiving an input which requests a selected number of said views;
mapping said input to a selected appropriate frames in said frames; and
decompressing said selected appropriate frames.

42. A computer readable storage medium as in claim 41 further comprising:
storing said appropriate frames that are compressed; and
allowing a user to playback said selected number of said views in a movie-like
sequence.

43. A computer readable storage medium as in claim 42 wherein said method is
performed by a digital processing system and wherein said data set is received from a
server computer system.

44. A computer readable storage medium as in claim 43 wherein said data set further comprises at least one key frame and a plurality of non-key frames for each of said plurality of blocks, each of said at least one key frame was compressed prior to said non-key frames such that a compressing sequence includes going away from said key frame until reaching a boundary of each of said plurality of blocks to cover each of said non-key frames.
45. A computer readable storage medium as in claim 44 wherein said preferred layout, said plurality of blocks, said at least one key frame, and said plurality of non-key frames were arranged such that a longest compressing path of any one of said non-key frames and said key frame is less than two frames from said key frame.
46. A computer readable storage medium as in claim 45 wherein said data set further comprising a video track layout for said views, said video track layout making references to a data source track, said data source track including compressed data for said views wherein each of said at least one key frame and said non-key frames is compressed only once and is referenced as many times as necessary by said video track layout.
47. A computer readable storage medium as in claim 46 wherein each of said at least one key frame is near a center of each of said plurality of blocks.

48. A computer readable storage medium as in claim 47 wherein each of said plurality of blocks has a size that is one of equal to a predetermined size and smaller than said predetermined size.
49. A computer readable storage medium as in claim 48 wherein said preferred layout is a two-dimensional array.
50. A computer readable storage medium as in claim 49 wherein said preferred layout is divided such that a smaller size block is at a further top and a further left corner of said preferred layout and a larger size block is at a further bottom and a further right corner of said preferred layout and wherein said at least one key frame is closer to a further top and a further left corner of each of said plurality of blocks.
51. A computer readable storage medium as in claim 50 wherein said method is performed by a digital processing system and wherein said data set is received from a server computer system.
52. A computer readable storage medium as in claim 51 wherein a frame differencing compression method is used to separately compress each of said plurality of blocks.
53. A digital processing system for processing a data set enabling interactive random access for different views of an object, said system comprising:

means for storing a plurality of frames of said object, said plurality of frames
representing a set of views of said object;
means for assigning a reference number to each of said plurality of frames;
means for arranging said plurality of frames in a preferred layout; and
means for dividing said preferred layout into a plurality of blocks having frames
sharing spatial similarities and compressing each of said plurality of
blocks separately.

54. A system as in claim 53 further comprising means for selecting at least one key frame
and a plurality of non-key frames for each of said plurality of blocks and means for
compressing said at least one key frame prior to compressing non-key frames such
that a compressing sequence includes going away from said key frame until reaching
a boundary of each of said plurality of blocks to cover each of said non-key frames.

55. A system as in claim 54 wherein said dividing said preferred layout into a plurality of
blocks and said selecting at least one key frame and a plurality of non-key frames for
each of said plurality of blocks is such that a longest compressing path of any one of
said non-key frames and said key frame is less than a predetermined number of
frames from said key frame.

56. A system as in claim 55 further comprises means for including a video track layout
for said set of views, said video track layout making references to a data source track,
said data source track to comprise compressed data for said set of views wherein each

of said at least one key frame and said non-key frames is compressed only once and is referenced as many times as necessary by said video track layout.

57. A digital processing implemented system for receiving and using a data set enabling interactive random access for different views of an object, said system comprising:
- means for transmitting a request to receive said data set, said data set including frames of said object, said frames representing views of said object; and
 - means for receiving said data set wherein said frames were arranged in a preferred layout, said preferred layout was divided into a plurality of blocks wherein each of said plurality of blocks was compressed separately.
58. A system as in claim 57 wherein said input further comprising means for manipulating said object using a cursor which is displayed on a display device.
59. A system as in claim 58 further comprising:
- means for receiving an input which requests a selected number of said views;
 - means for mapping said input to a selected appropriate frames in said frames; and
 - means for decompressing said selected appropriate frames.
60. A system as in claim 58 further comprising:
- means for storing said appropriate frames that are compressed; and
 - means for allowing a user to playback said selected number of said views in a movie-like sequence.

61. A system as in claim 60 wherein said data set further comprising at least one key frame and a plurality of non-key frames for each of said plurality of blocks, each of said at least one key frame was compressed prior to said non-key frames such that a compressing sequence includes going away from said key frame until reaching a boundary of each of said plurality of blocks to cover each of said non-key frames.
62. A system as in claim 61 wherein said preferred layout, said plurality of blocks, said at least one key frame, and said plurality of non-key frames were arranged such that a longest compressing path of any one of said non-key frames and said key frame is less than two frames from said key frame.
63. A system as in claim 62 wherein said data set further comprising a video track layout for said views, said video track layout making references to a data source track, said data source track including compressed data for said views wherein each of said at least one key frame and said non-key frames is compressed only once and is referenced as many times as necessary by said video track layout.